he estimated by what it fetches at Lewes, it is small indeed. We are too much out of humour to discuss the matter further, and will only say to those who may be tempted by this "remuneration" to make plans and estimates for rebuilding Lewes Free School, what we exclaimed at the commencement,—stupid architects!

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It has been suggested to us at various times that some of the best architectural subjects given in The Builder, if printed in a superior manner on good paper, with the accompanying descriptions, plans, &c., and issued periodically, would form a work that would be acceptable not only to those who are not buyers of The Builder, but to many who are—the current engravings being often creased by the news vendors or otherwise injured. We are disposed to try the experiment, and to publish, in a neat wrapper, under an appropriate title, about eight plates, with eight pages of letter-press, folio size, every second month, price half-a-crown. The first part would consist of Osborne House, with plan; Bridgewater House, plan and details; Church of St. Isaac, Petersburgh; Kensington Union Workhouse; Pembroke College, Oxford; the Liverpool Branch Bank; and the north porch of St. Mary Redcliffe, Bristol. Before determining upon the scheme, however, we should be glad to receive the names of such gentlemen as would be willing to become subscribers to the work.

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## THE NEW "PRINCE'S THEATRE ROYAL," GLASGOW.

In case they may happen to contain some points of practical interest to readers of The Builder, I have thrown together the few following particulars of the construction of this theatre; and which may, perhaps, serve to elicit further information on the general subject from those who have had occasion to direct their attention to it.

The premises which have just been converted, were erected, under my direction, about two years ago, for the exhibition of certain dioramic pictures by the brothers Daguerre. In planning the original structure, I recommended to the proprietor, in regard to its stability and permanency, that instead of limiting it to the probable existence of the diorama exhibition, it should be made capable of being finished interiorly in an architectural manner, and adapted to the purposes of a public hall, in which I considered the locality stood in need.

Accordingly, the mode of construction adopted consisted as follows:—Two-feet coursed-rubble stone walls were erected to the height to receive the floor, which is 13 feet above the ground line, leaving the entire area underneath clear, excepting the posts and pillars carrying the floor beams, and to be appropriated to another purpose. Upon these walls was set a massive framing of timber, consisting of a sill plate, 12 inches by 9 inches; angle and intermediate posts averaging about 12 feet apart, and measuring 12 inches by 12 inches; and a head plate 12 inches by 6 inches, the posts being tenoned at top and bottom into the plates, and braced up with struts 9 inches by 6 inches where they occurred over openings in the stone walls beneath, in each of which cases the sill was sustained by the post above with a strong bolt, in the same manner as the tie-beam of a roof. The spaces in the framing were filled in with 9-inch brickwork, the connection of which with the posts was insured by the insertion, midway in its thickness, of tongues of wrought iron, about 10 inches by 5 inches, and ¼ inch thick, having a long spike at one end for driving into the posts, into which they were inserted at short intervals, of course edgeways. The roof, in order to its being of a lightness suited to the walls, I formed something like the deck of a great ship, namely, a platform, with an external camber of—say 10 inches; in construction it consisted of trussed timber beams spanning the width of the building, placed coincident with the posts in the side walls, and carrying joists 9 by 2, about 4 feet from centre to centre, these in their turn carrying inch floor boarding, the joints grooved and tongued in the lower, and caulked with oakum in the upper part, then covered with strips of zinc, put on with zinced tacks, and the entire surface payed over with tar, lime, and sand, and finished with a coat of white, in order to its reflecting the sun's rays. The space thus enclosed measured 80 feet by 63 feet, and 33 feet high from floor line to top of wall framing.

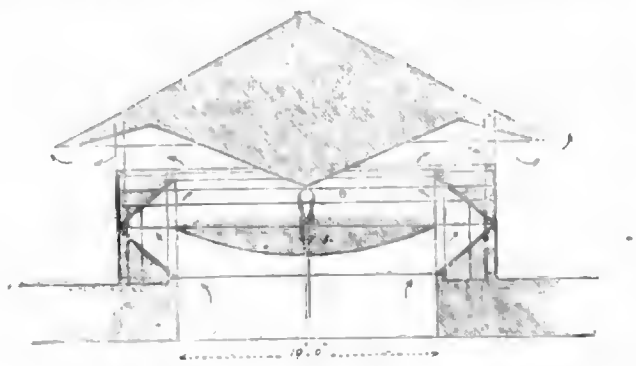
The truss beams were as follows: each consisted of two 12 by 5 flitches in the width, and these in two equal pieces in the length, well scarved and keyed together. These were set two inches apart, making the beam 12 inches square; and they rested, at the scarves, upon a cast-iron bearing-plate, 30 by 12, having a central bearing upright tongue, a few inches high, occupying the space between them. On either side of the plate was a square stub for preventing its moving longitudinally, and along the centre below was a semicircular groove for containing the tension rod, which was of two-inch round iron, and passed under it. This compound beam was, at its extreme ends, inserted into a cast-iron box, having flanges below, outside and inside the head plate of the wall framing, and a strong cylindrical sloping part on the top, at the back of which the tension-rod, which was passed through it, with screwed ends, was secured with a nut at least 4 inches long: at intervals between the end boxes and central bearing-plate, were introduced between the flitches circular blockings 6 inches diameter, and 4 inches thick, sunk an inch into the timber on either side, through which the flitches were bolted together: in the boxes they were kept apart by a piece of 2-inch board. Where the upper edge of the boxes would have bit deeply into the wood, upon the tightening of the tension rods, a piece of boiler-plate (malleable iron), was introduced; and where the end grains at the scarves would have penetrated each other from the same cause, that is, in the under joints, pieces of sheet-iron were inserted. On the other hand, the upper joints of the scarves, the tendency of which was to open, were strengthened with plate-iron and bolts; the beams were tied down to the wall framing, by bolts passing diagonally through both: for a few feet at both ends, the tension-rods were increased in diameter, so as to preserve the solid part of the screw the full 2 inches.

In the screwing up of these beams, I had an opportunity of observing an effect of which those trussing cast-iron beams of similar construction might remain in ignorance, namely, a decided tendency to turn up at the ends, caused by the tension-rod proceeding in a downward inclination from a point above the beam, and which, accompanied with the camber over the centre bearing-plate, produces something of a wavy form. In the present case, the distance of that point above the beam, and consequently the derangement produced, was very trifling: but in trussed-girder railway bridges which I have seen, with fins at their ends, and at the joints—the former for the very purpose of elevating the points of suspension, the strain thus produced must in some instances be dangerous. Shortly after the completion of the building, in order to allay the anxiety of the timid, who looked with some dread at the wide expanse of flat roof, and having sufficient space, I put in struts at either end, with straining-pieces between their heads, and another tye-rod at their feet. It seems strange that, notwithstanding its having been years ago ascertained that tension-trussing, with a central point of support, is much stronger than with two points, inasmuch as the centre is necessarily the weakest point, engineers do yet continue the latter practice, when they could, where the span required it, employ the central supported point of their beams as a point of suspension by aid of which to truss the two halves.

The foregoing description explains the general form of the building; but it remains to be mentioned that the diorama picture, which was selected as the first to be exhibited, was of such a size as to require that the end where it was hung should have a sinking in the floor of 4 feet in depth by 8 in width, as well as that the truss-beam there should be omitted, and a span-roof, with collar-tie, be thrown over the wide bay thus left in the main roof. By adopting this as the stage end, what with the elevation of the stage, its rise backwards (½-inch in the foot), and the depression in the floor, a range of dressing-rooms were obtained. The picture referred to required also an extension, on one side, of the width of the building, which has added to the commodiousness of the stage; and, to increase the vista in forest and other scenes, the central portion has been carried some distance backward, in the form of a wing to the main building. At the side of this is a building containing the green-room, property-room, wardrobe, sundry dressing-rooms, &c.

I now proceed to give some particulars of the construction and fitting-up of the theatre.

The box and gallery tiers are carried on beams, curved by forming them in thicknesses set edgeways: these beams are 9 inches square, having eight 1⅛th inch boards in their breadth. The mode of constructing them was as follows, taking the inner circle or horse-shoe, for example:—the figure being described full-size on the floor, a quantity of right-angled triangular brackets, about 15 inches by 9 inches, were set on edge on the floor, radiating inward from the inner line, and against these the first board was nailed; the other thicknesses were then nailed on the outside successively, breaking joint carefully, until the required thickness was completed, when the whole was further secured together by bolting it through at short intervals, suited especially to the situations of the external cross joints. By this plan, an exceedingly tough beam was obtained, having this advantage over a built one, that the grain of the wood was much less broken, and, in a manner, run round from end to end. Having such beams as these in front, and corresponding ones at the back, the joisting followed naturally in a radiating fashion. The back beams were well secured to the walls, to counteract any tendency to travel in the direction of the stage.



The above is a section of the ventilator over the pit, in which A is a shield of sheet iron, 9 feet 11 inches in diameter, on which the heat from the lights suspended below it strikes, and thus accelerates the upward current: B is a beam, with a pair of whorls in the middle, over which ropes pass from a small windlass at one side, and allow the gas-pendant to be lowered, when unscrewed at the coupling, for the purpose of the globes being cleaned, &c.

*Lighting.*—Credit is due to the firm of